

REMARKS

The Final Office Action mailed February 19, 2009, considered and rejected claims 1-21. Claims 1, 2, 9, 11 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatano et al., U.S. Publ. No. 2005/0226467 (filed Mar. 5, 2004) (hereinafter Hatano), in view of Thieme et al., U.S. Publ. 2006/0056662 (filed Aug. 20, 2003) (hereinafter Thieme), further in view of Biswas U.S. Patent No. 7,120,280 (filed Sep. 27, 2002) (hereinafter Biswas). Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatano in view of Thieme and further in view of Siegel et al., U.S. Publ. No. 2006/0034492 (filed Oct. 30, 2002) (hereinafter Siegel). Claims 4-8 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatano in view of Thieme and further in view of Biswas. Claims 12-19 and 21-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Siegel in view of Biswas.¹

By this response, claim 11 has been amended and claim 27 is newly presented for consideration. Claims 1-21 and 27 remain pending. Claims 1, 11, 12, and 27 are independent claims which remain at issue. Support for the amendments and the newly presented claim may be found within Specification ¶¶ 0053-0055.²

Initially, the Applicants would like to convey their willingness to amend the claims, if necessary, to overcome any cited references which may read upon the present invention as claimed. In order to make such amendments, as may be appropriate, however, the Applicants must have sufficient information in order to understand how any cited references may read upon the claims as presented. The Applicants respectfully request that the Office, if rejecting a claim, provide such sufficient information so that the Applicants may reasonably understand how the Office is interpreting each cited reference to read upon each of the limitations of each of the rejected claims.

Independent claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable in view of Hatano, in view of Thieme, and in view of Biswas.³ The Applicants respectfully disagree

¹ Although the prior art status of the cited art is not being challenged at this time, Applicant reserves the right to challenge the prior art status of the cited art at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of the cited art.

² Please note that the paragraph numbers have been taken from the published application, U.S. Pat. Pub. No. 2005/0227217 (Oct. 13, 2005). It should also be noted that the present invention and claims as recited take support from the entire Specification. As such, no particular part of the Specification should be considered separately from the entirety of the Specification.

³ Office Communication p. 2 (paper no. 20090212, Feb. 19, 2009).

and traverse the rejection. The Applicants respectfully submit that the Office has failed to satisfy the basic requirements of a *prima facie* case of obviousness under 35 U.S.C. § 103. To establish a *prima facie* case of obviousness, there must be a "clear articulation of the reason(s) why the claimed invention would have been obvious," "the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit," and "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."⁴

The entire discussion provided by the Office in support of the § 103 rejection of claim 1 is reproduced here (with each element or limitation which has been asserted by the Office to be taught by the cited references indicated by underline):

"Regarding claim 1, Hatano discloses a method for detecting a pattern object (e.g. biometric image) comprising detecting a physical property of the object (e.g. quality evaluation), computing sum of the set of template data values (see P .3, (0041)-(0042)), calculating a difference score between the stored data values and the input data values (e.g. quality evaluation) and determining whether the difference score is within a match threshold (See Fig.2, elements 203,204). Hatano does not specifically disclose creating template of the patterned object and each template having data values representing a magnitude of the physical property. However, Thieme discloses encapsulating image's physical property data such as grayscale, dimension etc. and generating templates (See abstract and (0043)-(0044)). Therefore, it would have been obvious to one of ordinary skill in the art to modify Hatano's invention to generate data values for all the spatially shifting templates as disclosed in Thieme's invention in order to design a system with a more accurate comparison result.

Hatano/Thieme do not specifically disclose the patterned object being placed in any arbitrary orientation or the template having quadrilateral bounding shape. Biswas discloses in his invention a method that allows placing an image on the display surface in any arbitrary orientation without affecting the template matching capability of the device (See Co1.7, 13-33). Biswas further discloses quadrilateral shape of templates (See Fig.1). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of Biswas' invention into the system and method of Hatano/Thieme in order to design a system that is more efficient in template matching process."⁵

Within the Office's discussion of the rejection, reproduced above, the Applicants have emphasized the relevant portion of the Office's rejection which asserts that particular elements or limitations as recited within the claim are taught or suggested by the cited references. The Applicants respectfully note that the elements and limitations which have been asserted by the

⁴ MPEP § 2143; see also *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385 (2007).

⁵ Office Comm. pp. 2-3 (emphasis added).

Office as taught or suggested by the cited references *do not comprise all the elements and limitations of the claim* as presented. With regard to particular elements and limitations of claim 1, the Office has asserted only that

"Hatano discloses

*a method for detecting a pattern object . . . comprising
detecting a physical property of the object . . .
computing sum of the set of template data values . . .
calculating a difference score between the stored data values and the
input data values . . . and
determining whether the difference score is within a match threshold . . .*

Thieme discloses

*encapsulating image's physical property data such as grayscale,
dimension etc. and
generating templates . . . [and]*

Biswas discloses . . .

*a method that allows placing an image on the display surface in any
arbitrary orientation . . . [and]
quadrilateral shape of templates. . . ."*⁶

The Applicants note that the elements which have been asserted by the Office as taught or suggested by the cited references – each of which is noted above – do not comprise all the limitations of the claim as presented and therefore a prima facie case of obviousness under 35 U.S.C. § 103 has not been asserted.

The Applicants respectfully note that "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (emphasis added); see also MPEP § 2143.03. The Applicants respectfully submit that the words as recited in the claims have not been fully and duly considered as required.⁷ The Applicant further assert that limitations which are recited in the claim have not been considered and have not been asserted by the Office to be taught or suggested by any prior art reference.

For the purpose of illustration, Claim 1 has been reproduced here with those portions which have been asserted by the Office as being taught by the cited references indicated by underline:

⁶ Office Comm. pp. 2–3 (emphasis added).

⁷ See *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."); see also MPEP § 2143.03.

1. (Original) A method for detecting a patterned object placed adjacent to an interactive display surface, the interactive display surface having a surface origin, and a plurality of surface coordinate locations defined along two orthogonal axes in relation to the surface origin, comprising the steps of:
 - (a) detecting a physical property of the patterned object when the patterned object is placed in any arbitrary orientation adjacent to an object side of an interactive display surface;
 - (b) creating a template of the patterned object at a known orientation, the template comprising a quadrilateral template bounding region having a side aligned with one of the two orthogonal axes and a set of template data values associated with the quadrilateral template bounding region, each template data value representing a magnitude of the physical property at a different one of a plurality of surface coordinate locations within a bounding area encompassing the patterned object;
 - (c) computing a sum of the set of template data values;
 - (d) acquiring input data values from the interactive display surface, each of the input data values corresponding to a different one of the plurality of surface coordinate locations of the interactive display surface, each input data value representing a magnitude of the physical property detected at a different one of said plurality of surface coordinate locations;
 - (e) calculating a difference score between the template data values and the input data values encompassed by the quadrilateral template bounding region; and
 - (f) if the difference score is within a match threshold, determining that the patterned object is on or adjacent to the interactive display surface.

The Applicants respectfully submit that it is clear from the illustrated claim that substantial portions of the claim have not been considered and have not been asserted by the Office as being taught or suggested by any cited prior art reference or combination of references. The Applicants respectfully submit that the portions of the claim which have apparently not been considered by the Office represent relevant words and entire limitations which give the claim meaning, provide meaningful limitations, and therefore should not be ignored. The Applicants respectfully submit that, because relevant portions of the claim have not been considered, a prima facie case of obviousness has not been presented.

In particular, it has not been asserted that the cited references teach or suggest (and, in fact, the cited references fail to teach or suggest) the interactive display surface having a surface origin, and a plurality of surface coordinate locations defined along two orthogonal axes in relation to the surface origin. It has also not been asserted that the cited references teach or suggest (and, in fact, the cited references fail to teach or suggest) the template comprising a quadrilateral template bounding region having a side aligned with one of the two orthogonal axes

and a set of template data values associated with the quadrilateral template bounding region, each template data value representing a magnitude of the physical property at a different one of a plurality of surface coordinate locations within a bounding area encompassing the patterned object.

It has also not been asserted that the cited references teach or suggest (and, in fact, the cited references fail to teach or suggest) acquiring input data values from the interactive display surface, each of the input data values corresponding to a different one of the plurality of surface coordinate locations of the interactive display surface, each input data value representing a magnitude of the physical property detected at a different one of said plurality of surface coordinate locations.

Further, no reason has been provided why the words and limitations of the claim which have not been asserted as being taught by any reference or combination of references may be omitted in consideration of the claim. The Applicants submit that each word and limitation as recited in the claim is relevant and must, as required,⁸ be considered. Absent consideration of each and every word and limitation, the Applicants submit that the claim has not been duly or adequately considered.

Because, as noted above, *inter alia*, all the words of claim 1 have not been fully considered and because the cited references fail to teach or suggest all the limitations of claim 1 as presented, *inter alia*, the Applicants submit that a rejection of claim 1 under 35 U.S.C. § 103(a) would be improper and should be withdrawn. Accordingly, the Applicants respectfully request full and due reconsideration of claim 1 (as well as the respective dependent claims).

Independent claim 11 recites a computer program product embodiment of the method recited in claim 1. Because claim 11 incorporates all the relevant limitations of claim 1, the discussion above applies also to claim 11. Because all the words of claim 11 have not been fully considered and because, *inter alia*, the cited references fail to teach or suggest all the limitations of claim 11 as presented, the Applicants submit that a rejection of claim 11 under 35 U.S.C. § 103(a) would be improper and should be withdrawn. Accordingly, the Applicants respectfully request full and due reconsideration of claim 11.

⁸ See *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."); see also MPEP § 2143.03.

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Siegel in view of Biswas.⁹ The Applicants respectfully disagree and traverse the rejection. As discussed in reference to claim 1, above, in the rejection of claim 12 the Office has not fully considered all of the words and all of the limitations of the claim as presented. The entire rejection of claim 12 as asserted by the Office is reproduced here (with emphasis added to each element or limitation which has been asserted by the Office to be taught by a cited reference):

"Regarding claims 12, 13, Siegel discloses an interactive display (e.g. scanner), a light source that directs the light toward the opposite side of the interactive display and through the display, light sensor and a processing unit wherein the processing unit is in charge of detecting the intensity of light (See P.2, (0033), P.8, (0077)), and creating a template of the patterned object and acquiring the input data values (see Fig.8). Siegel further discloses template data values representing the intensity of reflected light and acquiring inout data values from the interactive display surface with the light sensor (See P.3, (0038)-(0039)). Siegel does not specifically disclose computing sum of the set of template data and calculating the difference score to determine whether or not the score falls within a threshold. However, Biswas discloses such in his invention (See Col.3, 43-61, Fig.5, element 70). Biswas further discloses the quadrilateral boundary region of the templates (See Fig.1) Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of the Biswas invention into the limitations of the Siegel invention in order to design a system with a more effective template matching tool."¹⁰

In this rejection of claim 12 (and, for illustration, extracting the elements of the claim which are asserted by the Office as taught by a cited reference), the Office asserts only that:

"Siegel discloses an interactive display . . . ,
a light source that directs the light toward the opposite side of the interactive display and through the display, light sensor and a processing unit wherein the processing unit is in charge of detecting the intensity of light . . . , and
creating a template of the patterned object and acquiring the input data values

Siegel further discloses

template data values representing the intensity of reflected light and acquiring inout data values from the interactive display surface with the light sensor

Siegel does not specifically disclose

computing sum of the set of template data and
calculating the difference score to determine whether or not the score falls within a threshold.

⁹ Office Comm. p. 5.

¹⁰ Office Comm. pp. 5-6 (emphasis added).

However, Biswas discloses such in his invention

Biswas further discloses

the quadrilateral boundary region of the templates . . .

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of the Biswas invention into the limitations of the Siegel invention in order to design a system with a more effective template matching tool."¹¹

However, claim 12 recites much more detail, more words, more elements, and more limitations than those asserted by the Office as being taught by the cited references. For illustration, Claim 1 has been reproduced here in its entirety with each limitation which has been asserted by the Office as being taught by the cited references indicated:

12. (Original) A system for detecting a patterned object, comprising:
- (a) *an interactive display* surface having a surface origin, a plurality of surface coordinate locations defined along two orthogonal axes in relation to the surface origin, an interactive side adjacent to which the patterned object can be placed and manipulated, and an opposite side;
 - (b) *a light source that directs infrared light toward the opposite side of the interactive display surface and through the interactive display surface*, to the interactive side;
 - (c) *a light sensor* disposed to receive and sense infrared light reflected back from the patterned object through the interactive display surface;
 - (d) *a processor* in communication with the light sensor; and
 - (e) *a memory* in communication with the processor, the memory storing data and machine instructions that cause the processor to carry out a plurality of functions, including:
 - (i) detecting an intensity of the infrared light reflected back from the patterned object with the light sensor;
 - (ii) *creating a template of the patterned object* at a known orientation, the *template comprising a quadrilateral template bounding region* having a side aligned with one of the two orthogonal axes and a set of template data values associated with the quadrilateral template bounding region, each template data value representing an intensity of reflected infrared light at a different location within a bounding area encompassing the patterned object;
 - (iii) *computing a sum of the set of template data values*;
 - (iv) *acquiring input data values from the interactive display surface with the light sensor*, each of the input data values corresponding to the intensity of infrared light reflected from a different one of the plurality of surface coordinate locations of the interactive display surface;
 - (v) *calculating a difference score* between the template data values and the input data values encompassed by the quadrilateral template bounding region; and;
 - (vi) if the *difference score is within a match threshold*, determining that

¹¹ Office Comm. pp. 5-6 (emphasis added).

the patterned object is adjacent to the interactive surface.

It is clear from the illustrated claim above that substantial relevant portions of the claim have not been considered by the Office and have not been asserted to be taught by any cited reference or combination of references. The Applicants again note that "*All words in a claim must be considered* in judging the patentability of that claim against the prior art."¹² However, it is clear from the illustrated claim above that substantial portions of claim 12 – relevant words and entire limitations – have not been considered and have not been asserted to be taught or suggested by any prior art reference or combination of references.

In particular, it has not been asserted, *inter alia*, that any combination of references teaches or suggests (and, in fact, the references do not teach or suggest) an interactive display surface having a surface origin, a plurality of surface coordinate locations defined along two orthogonal axes in relation to the surface origin, an interactive side adjacent to which the patterned object can be placed and manipulated, and an opposite side.

It has also not been asserted that any combination of references teaches or suggests (and, in fact, the references do not teach or suggest) creating a template of the patterned object at a known orientation, the template comprising a quadrilateral template bounding region having a side aligned with one of the two orthogonal axes and a set of template data values associated with the quadrilateral template bounding region, each template data value representing an intensity of reflected infrared light at a different location within a bounding area encompassing the patterned object.

It has also not been asserted that any combination of references teaches or suggests (and, in fact, the references do not teach or suggest) each of the input data values corresponding to the intensity of infrared light reflected from a different one of the plurality of surface coordinate locations of the interactive display surface.

Because, as noted above, *inter alia*, all the words of claim 12 have not been fully considered and because the cited references fail to teach or suggest all the limitations of claim 12 as presented, *inter alia*, the Applicants submit that a rejection of claim 12 under 35 U.S.C. § 103(a) would be improper and should be withdrawn. Accordingly, the Applicants respectfully request full and due reconsideration of claim 12 (as well as the respective dependent claims).

¹² *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (emphasis added); *see also* MPEP § 2143.03.

In view of the foregoing, Applicant respectfully submits that the other rejections to the claims are now moot and do not, therefore, need to be addressed individually at this time. It will be appreciated, however, that this should not be construed as Applicant acquiescing to any of the purported teachings or assertions made in the last action regarding the cited art or the pending application, including any official notice. Instead, Applicant reserves the right to challenge any of the purported teachings or assertions made in the last action at any appropriate time in the future, should the need arise. Furthermore, to the extent that the Examiner has relied on any Official Notice, explicitly or implicitly, Applicant specifically requests that the Examiner provide references supporting the teachings officially noticed, as well as the required motivation or suggestion to combine the relied upon notice with the other art of record.

In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at (801) 533-9800.

Dated this 19th day of June, 2009.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Rick D. Nydegger", with a stylized flourish at the end.

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